

WHAT IS CLAIMED IS:

1. A range selection control device of a shift-by-wire type automatic transmission of a motor vehicle, comprising:

5 a range selector that issues a range selection command signal representative of an operation range of the transmission meeting with a driver's intention, the operating range being at least one of P(parking)-range, R(reverse)-range, N(neutral)-range and D(drive)-range;

10 an actuator that causes the transmission to assume a certain operation range when receiving an instruction signal; and a control unit that issues the instruction signal by processing the range selection command signal, so that the transmission is able to assume an operation range that meets with the driver's intention,

15 wherein the control unit is configured to carry out:

when the range selector fails to issue the range selection command signal, presuming a range selection intended by the driver based on a previous operation of the range selector; and

20 based on the presumption, causing through the actuator the transmission to actually carry out at least one of first and second range selection operations, the first range selection operation meeting with the driver's intention and the second range selection operation being to maintain the operation range that has been kept just before the failure of the range selector.

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2. A range selection control device as claimed in Claim 1, in which the control unit is further configured to presume the driver's intended range selection based on both the operation range that has been kept just before the failure of the range selector and a direction in which the range selector has been moved just before the range selector failure.

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3. A range selection control device as claimed in Claim 1, in which the control unit is further configured to carry out:

upon presuming that the range selection intended by the driver would be a range switch from one of P-range and N-range to D-range with the range selector being in failure, maintaining one of P-range and N-range.

4. A range selection control device as claimed in Claim 1, in which the control unit is further configured to carry out:

upon presuming that the range selection intended by the driver would be a range change from D-range to one of P-range and N-range with the range selector being in failure, effecting actually the range change to one of P-range and N-range.

5. A range selection control device as claimed in Claim 4, in which the control unit is further configured to carry out:

upon presuming that the range selection intended by the driver would be a range change from D-range to P-range with the range selector being in failure, determining whether or not a speed of the vehicle is within a safe parking speed range that permits a safe parking lock of the transmission;

effecting actually the range change to P-range when the vehicle speed is determined within the safe parking speed range; and

effecting actually the range change to N-range when the vehicle speed is over the safe parking speed range.

6. A range selection control device as claimed in Claim 4, in which the control unit is further configured to carry out:

upon presuming that the range selection intended by the driver would be a range change from D-range to N-range with the range selector being in failure, determining whether or not a

speed of the vehicle is within a lower speed range that needs no engine braking,

effecting actually the range change to N-range when the vehicle speed is determined within the lower speed range; and

5 maintaining D-range when the vehicle speed is determined higher than the lower speed range.

7. In a range selection control device of a shift-by-wire type automatic transmission of a motor vehicle having a range selector
10 that issues a range selection command signal representative of an operation range of the transmission meeting with a driver's intention, the operating range being at least one of P(parking)-range, R(reverse)-range, N(neutral)-range and D(drive)-range, and actuator that causes the transmission to assume a certain
15 operation range when receiving an instruction signal, the instruction signal being produced by processing the range selection command signal, so that the transmission is able to assume an operation range that meets with the driver's intention,
a method of operating the range selection control device
20 comprising:

when the range selector fails to issue the range selection command signal, presuming a range selection intended by the driver based on a previous operation of the range selector; and

25 based on the presumption, causing through the actuator the transmission to actually carry out at least one of first and second range selection operations, the first range selection being meeting with the driver's intention and the second range selection operation being to maintain the operation range that has been kept just before the failure of the range selector.

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